AUTHORS INDEX

A

Ach, G. C., Foundry Performance and Applications of Tungeston Carbide Surfacing for Wearing Metal Parts of Operating Equipment 430
Albright D. L., Bending Fatigue Properties and Residual Stresses in A356 Aluminum Alloy 655
Aleshin, E., Utilization of Foundry Waste By-Products 313
Anderson, J. W., Harbur, D. R., Maraman, W. J., Unusual Problems Encountered in Casting High-Density, High-Purity Plutonium 60
Angeles, O., Geiger, G. H., Loper, C. R., Factors Influencing Carbon Pickup in Cast Iron 629

B

Balvanera, A. and Fuchs E., A Rational System for Quoting Casting Prices 485
Bargeron, W. N., Flinn, R. A., Trojan, P. K., Guichelaar P. An Intensive Investigation of Dross in Nodular Cast Iron 323
Barto, R. L., Hurd, D. T., Stoltenburg, J. P., Die Castings of Stainless and Alloy Steels 511
Beeley, P. R. and Snape, E., The Effect of Crucible-Melt Reaction on the Oxygen Content of Vacuum Induction Melted Nickel-Base Alloys 183
Berry, J. T., St. John, F. M., Wu, W., Effects of Thermal Parameters on Ductility of Aluminum Alloys 645
Bertolino, M. F. and Wallace, J. F., Influence of Metal Factors, Molding Sand Composition and Casting Shape on Mold Cavity Enlargement 589
Branler, E. A., Goodigan, C., Kimble, W. A., Cast Weld Construction of Thick Wall Sections Cast Steel 555
Briggs, C. W., The Evaluation of Discontinuities in Castings Under Industrially-Stressed Conditions .. 128
Burgess, P. B., Hernandez, A., Control of Residual Chromium in Malleable Iron 276
Burgess, P. B., Hernandez, A., High Carbon Equivalent Iron 453
Buhr, R. K., Vermicular Graphite Formation in Heavy Section Nodular Iron Castings 497

C

Caine, J. B. and Toepke, R. E., Water-Bond Ratios and Moldability of Molding Sand 65
Campbell, J. S. and C. A. Parlanti, New Furnace Designed for the Automatic Pouring of Cast Irons and Other Alloys 110
Clow, S. C. and Hafner, R. H., Melting Prereduced Iron-Ore Pellets in the Cupola 53
Colton, R. A., Lindloff, D. S., Maenza, J. L., A Brief Look at Oxygen Enrichment in Crucible Melting 196
Creese, R. C. and Draper, A. B., A Thermo-chemical-Mechanical Cupola Charging Model 264

D

Date, R. P., Loper, C. R., Roberts, R. A. and Poirier, D. R., Solidification of Copper-Base Alloys in Various Section Thicknesses 573
Dietert, H W., Graham, A. and Schumacher, J. S., Shatter Test of Molding Materials 283
Doelman, R. L. and Sanders, C. A., Durability of Bonding Clays–Part V, Durability Characteristics of Twenty-Nine Commercial Clays 349
Doelman, R. L. and Sanders, C. A., A Review of Sand Surface Area Relationships 85

DRAPER, A. B. CREESE, R. C., A Thermochemical-Mechanical Cupola Charging Model 264
DRAPER, A. B., FEHRENBACH, J., Determination of Particle Sizes of Sand Grains and the Coating Thickness on a Mulled Sand 142
DRAPER, A. and FEHRENBACH, J., Green Compression Strength as a Function of Coating Thickness and Points of Contact 529

E

EDELMAN, R. E. and SAIA, A., Coring Blind Holes in Small Uranium Castings 222
EDELMAN, R. E. and SAIA, A., A Graphic Molding Material for Casting of Magnesium-Lithium Alloys 189
EWING, R. H. and STONEBROOK, E. E., High Strength Aluminum Casting Alloy 230

F

FEHRENBACH, J. and DRAPER, A. B., Determination of Particle Sizes of Sand Grains and the Coating Thickness on a Mulled Sand 142
FEHRENBACH, J. and DRAPER, A. B., Green Compression Strength as a Function of Coating Thickness and Points of Contact 529
FISCHER, E. F. and ROOY, E. L., Vacuum Density Test 97
FLINN, R. A., TROJAN, P. K., GUICHELAAR, P., BARGERON, W. N., An Intensive Investigation of Dross in Nodular Cast Iron 323
FUCHS, E. and BALVANERA, A., A Rational System for and Aluminum 638
Quoting Casting Prices 485

G

GEIGER, G. H., LOPER, C. R., ANGELES, O., Factors Influencing Carbon Pickup in Cast Iron 629
GEIGER, G. H., An Analysis of Manganese Fading in Acid Electric Furnace Steel Melting 44
GOODIGAN, C., BRANLER, E. A., KIMBLE, W. A., Cast Weld Construction of Thick Wall Sections Cast Steel 555
GRAHAM, A., SCHUMACHER, J. S., DIETERT, H. W., Shatter Test of Molding Materials 283
GRANDY, E. J., SCHMIDT, D. G., RIDELL, F. L. and ROMANOFF, W., A Versatile New White Copper-Base Casting Alloy with Zinc, Manganese, Nickel and Aluminum 638
GROMAN, R H., Recommended Practices for the Repair and Salvage Welding of Copper Base Castings 441
GUICHELAAR, P., TROJAN, P. K., BARGERON, W. N., FLINN, R. A., An Intensive Investigation of Dross in Nodular Cast Iron 323

H

HAFNER, R. H. and CLOW, S. C., Melting Prereduced Iron-Ore Pellets in the Cupola 53
HARBUR, D. R., ANDERSON, J. W. and MARAMAN, W. J., Unusual Problems Encountered in Casting High-Density, High-Purity Plutonium 60
HALLERBERG, W. L. and WALLACE, J. F., Effects and Neutralization of Trace Elements in Malleable Iron 405
HEINE, H. J. and HEINE, R. W., Some Metallurgical Factors in the Prevention of Checks and Other Defects in White Iron Castings 470
HEINE, R. W., Feeding Paths for Risering Castings . 463
HEINE, R. W., Riser Base and Connection Design for White Iron Castings 559
HEINE, R. W. and LOPER, C. R., Dentritic Structure Spiking in Ductile Iron 547
HEINE, R. W. and OLEN, K. R., A Revision of the Fe-C-Si System 369
HEINE, R. W. and SCHUMACHER, J. S., Dry Strength Relationships from Green Molding Sands 504
HERNANDEZ, A., BURGESS, P. B., Control of Residual Chromium in Malleable Iron 276
HERNANDEZ, A., BURGESS, P. B., High Carbon Equivalent Iron 453
HURD, D. T., BARTO, R. L., STOLTENBURG, J. P., Die Casting of Stainless and Alloy Steels 511

I

ITO, S., SUGIYAMA, Y., MOROOKA, T. and NAKAMURA, K., Study on Sonic Testing of Gray Cast Iron 70

K

KIES, F. K., SCHELLING, R. D., MERCIA, P. O., Strengthening of Ni-Resist by Refrigeration and Reaustenization 425
KIMBLE, W. A., BRANLER, E. A., GOODIGAN, C., Cast Weld Construction of Thick Wall Sections Cast Steel 555
KOTZIN, E. L., The Acid Demand Value and Its Place in Foundry Sand Control 305
KUST, R., LOPER, C. R., The Production of Heavy Section Ductile Iron 540

L

LAGOWSKI, B. and MEIER, J. W., Effect of Cold Work on Tensile Properties of Magnesium Casting Alloys 174
LAGOWSKI, B. and MEIER, J. W., Recent Trends in Mg-Al-Zn Casting Alloys 133
LEVELINK, H. G., VANDENBERG, H., Water Explosion as a Cause of Casting Defects 241
LINDLOFF, D. S., COLTON, R. A., MAENZA, J. L., A Brief Look at Oxygen Enrichment in Crucible Melting 196
LOPER, C. R., ANGELES, O., GEIGER, G. H., Factors Influencing Carbon Pickup in Cast Iron 629
LOPER, C. R., DATE, R. P., POIRIER, D. R. and ROBERTS, R. A., Solidification on Copper-Base Alloys in Various Section Thicknesses 573
LOPER, C. R., HEINE, R. W., Dentritic Structure and Spiking in Ductile Iron 547
LOPER, C. R. and KUST, R., The Production of Heavy Section Ductile Iron 540
LOPER, C. R., LUTZ, R. H., WILDERMUTH, J. H., A Study of Thin Metal Ingate Restrictions in Steel and Ductile Iron Castings 258
LOPER, C. R. and POIRIER, D. R., The Effect of Solidification on the Mechanical Properties and Microstructure of High Carbon Ferrous Alloys 565
LUTZ, R. H., WILDERMUTH, J. H., LOPER, C. R., A Study of Thin Metal Ingate Restrictions in Steel and Ductile Iron Castings 258

M

MAENZA, J. L., LINDLOFF, D. S., COLTON, R. A., A Brief Look at Oxygen Enrichment in Crucible Melting 196

MADADEVAN, N. S., SREENIVASA, K. S., SESHADRI, M. R. and RAMACHANDRAN, A., Influence of Solidification Gradients on Casting Soundness of Aluminum-4.5% Copper Alloy 77
MARANDE, R. F., Pearlitic Malleable by Air-Quench and Temper and by Air-Quench, Reheat, Oil-Quench and Temper 127
MARAMAN, W. J., ANDERSON, J. W., HARBUR, D. R., Unusal Problems Encountered in Casting High-Density, High-Purity Plutonium 60
MAREK, C. T., Effect of Benzene and Xylene Fractions from Seacoal on the Transformation Zones in Green Sand 29
MAREK, C. T. and RAU, R. H. G., Effect of Seacoal on Properties of the Transformation Zones 9
MEIER, J. W. and LAGOWSKI, B., Recent Trends in Mg-Al-Zn Casting Alloys 133
MEIER, J. W. and LAGOWSKI, B., Effect of Cold Work on Tensile Properties of Magnesium Casting Alloys. 174
MERCIA, P. O., KIES, F. K., SCHELLENG, R. D., Strengthening of Ni-Resist by Refrigeration and Reaustenization 425
MERRILL, T. W. and MICKELSON, R. L., Experiments in Making Cerium Ductile Iron 289
MICKELSON, R. L. and MERRILL, T. W., Experiments in Making Cerium Ductile Iron 289
MOROOKA, T., SUGIYAMA, Y., ITO, S. and NAKAMURA, K., Study on Sonic Testing of Gray Cast Iron 70
MOTZ, J. and ORTHS, K., The Influence of Some Elements on the Matrix and the Properties of Ductile Iron Castings after Solidification in Sand and Ingot Molds 201
MUELLER, S. A., The 17,000 sfpm High Speed Abrasive Portable Grinding Wheel 243

N

NAKAMURA, K., ITO, S., SUGIYAMA, Y. and MOROOKA, T., Study on Sonic Testing of Gray Cast Iron 70
NOLAN, T. W., What Shall it Be for 17,000 sfpm Grinding, Air or High Frequency? 256

O

OLEN, K. R. and HEINE, R. W., A Revision of the Fe-C-Si System 369
ONO, K. and SASAKI, S., Application of Ultrasonic Testing Techniques to the Quality Evaluation of Cast Iron Rolls 169
ORTHS, K. and MOTZ, J., The Influence of Some Elements on the Matrix and the Properties of Ductile Iron Castings after Solidfication in Sand and Ingot Molds 201

P

PARKER, E. and PEALE, A. M., Design Criteria of a High-Speed Portable Grinder 225
PARALANTI, C. A. and CAMPBELL, J. S., New Furnace Designed for the Automatic Pouring of Cast Irons and Other Alloys 110
PARRIS, J. L., The 17,000 sfpm High Speed Grinder 307
PEALE, A. M. and PARKER, E., Design Criteria of a High-Speed Portable Grinder 225
PETERSON, E. F., WINN, J. L., Building and Adapting Core Boxes for Use in Modern Core Blowing Equipment 297
PHELPS, E. H., Low Temperature Formation of Investment Molds 252
POIRIER, D. R. and LOPER, C. R., The Effect of Solidification on the Mechanical Properties and Microstructure of High Carbon Ferrous Alloys 565
POIRIER, D. R., ROBERTS, R. A., DATE, R. P. and LOPER, C. R., Solidification of Copper-Base Alloys in Various Section Thicknesses 573
PRASAD, J. S. and WATMOUGH, T., Thermal Treatment to Achieve Dimensional Stability in Heat-Resistant Cast Iron and Steel 447

R

RAMACHANDRAN, A., MAHADEVAN, N. S., SREENIVASA, K. S., SESHADRI, M. R., Influence of Solidification Gradients on Casting Soundness of Aluminum-4.5% Copper Alloy 77
RAU, R. H. G. and MAREK, C. T., Effect of Seacoal on Properties of the Transformation Zones 9
REDING, J. N., A Study of Factors Influencing the Separation of Flux from Magnesium Alloys 92
RIDDELL, F. L., ROMANOFF, W., GRANDY, E. J. and SCHMIDT, D. G., A Versatile New White Copper-Base Casting Alloy with Zinc, Manganese, Nickel and Aluminum 638
ROBERTS, R A., POIRIER, D. R., DATE, R. P. and LOPER, C. R., Solidification of Copper-Base Alloys in Various Section Thicknesses 573
ROBINS, J and TORRIELLO, L. I., Cold Box Process—Sand and Metal Performance 212
ROMANOFF, W., SCHMIDT, D. G., GRANDY, E. J. and RIDDELL, F. L., A Versatile New White Copper-Base Casting Alloy with Zinc, Manganese, Nickel and Aluminum 638
ROOY, E. L. and FISCHER, E. F., Vacuum Density Test 97
RUDDLE, R. W., Losses in Melting Copper-Base Alloys 21
RUNDLE, D. F., SPONSELLER, D. L. SCHOLTZ, W. G., Development of Low-Alloy Ductile Irons for Service at 1200 to 1500 F 353

S

SAIA, A. and FDELMAN, R. E., A Graphic Molding Material for Casting of Magnesium-Lithium Alloys 189
SAIA, A., and EDELMAN, R. E., Coring Blind Holes in Small Uranium Castings 222
SANDERS, CA. and DOELMAN, R. L., Durability of Bonding Clays—Part V, Durability Characteristics of Twenty-Nine Commercial Clays 349
SANDERS, C. A. and DOELMAN, R. L., A Review of Sand Surface Area Relationships 85
SASAKI, S. and K. ONO, Application of Ultrasonic Testing Techniques to the Quality Evaluation of Cast Iron Rolls 169
SAWYER, J. C. and WALLACE, J. F., Effects and Neutralization of Trace Elements in Ductile and Gray Irons 385
SCHELLENG, R. D., MERCIA, P. O., KIES, F. K., Strengthening of Ni-Resist by Refrigeration and Reaustenization 425
SCHMIDT, D. G., GRANDY, E. J., RIDDELL, F. L., ROMANOFF, W., A Versatile New White Copper-Base Casting Alloy with Zinc, Manganese, Nickel and Aluminum 638
SCHOLZ, W. and SEMCHYSHEN, M., Effect of Molybedenum on the Hardenability of Ductile Cast Iron 1
SCHOLZ, W. G., SPONSELLER, D. L., RUNDLE, D. F., Development of Low-Alloy Ductile Irons for Service at 1200 to 1500 F 353

SCHUMACHER, J. S. and HEINE, R. W., Dry Strength Relationships from Green Molding Sands 504
SEMCHYSHEN, M. and SCHOLZ, W., Effect of Molybedenum of the Hardenability of Ductile Cast Iron 1
SESHADRI, M. R., MAHADEVAN, N. S., SREENIVASA, K. S., RAMACHANDRAN, A., Influence of Solidification Gradients on Casting Soundness of Aluminum-4.5% Copper Alloy 77
SHIREY, D. R., WILLIAMS, D. C., Observations on Factors Affecting Mold-Metal Interfacial Penetration Phenomena 661
SHOLL, A., Method for Continuous Desulfurizing and Recarbonizing by Use of the Gazal Porous Plug Method 123
SIGERFOOS, C. C. and H. WOMOCHEL, Influence of the Mold on Shrinkage in Ferrous Castings 417
SKROCKI, R. R. and WALLACE, J. F., Permanent Molding of Iron and Steel 581
SNAPE, E. and BEELEY, P. R., The Effect of Crucible-Melt Reaction on the Oxygen Content of Vacuum Induction Melted Nickel-Base Alloys 183
STOLTENBURG, J. P., HURD, D. T., BARTO, R. L., Die Castings of Stainless and Alloy Steels 511
SPONSELLER, D. L., SCHOLZ, W. G., RUNDLE, D. F., Development of Low-Alloy Ductile Irons for Service at 1200 to 1500 F 353
SREENIVASA, K. S., MAHADEVAN, N. S., SESHADRI, M. R., RAMACHANDRAN, A., Influence of Solidification Gradients on Casting Soundness of Aluminum-4.5% Copper Alloy 77
ST. JOHN, F. M., BERRY, J. T., WU, W., Effects of Thermal Parameters on Ductility of Aluminum Alloys 645
STONEBROOK, E. E. and EWING, R. H., High Strength Aluminum Casting Alloy 230
SUGIYAMA, Y., MOROOKA, T., ITO, S. and NAKAMURA, K., Study on Sonic Testing of Gray Cast Iron 70

T

THOMSON, R., Charpy Impact Properties of Bronze Propeller Alloys 99
TOEPKE, R. E. and CAINE, J. B., Water-Bond Ratios and Moldability of Molding Sands 65
TORRIELLO, L. I. and ROBINS, J., Cold Box Process-Sand and Metal Performance 212
TROJAN, P. K., GUICHELAAR, P., BARGERON, W. N., FLINN, R. A. An Intensive Investigation of Dross in Nodular Cast Iron 323

V

VAN EEGHEM, J. R., Wet Strength in the Condensing Zone—Its Relation to Scabbing Tendency of Synthetic and Natural Bonded Sands 490
VANEK, R. W., Engineering of Machine Tool Patterns for the Jobbing Foundry 311
VAN DEN BERG, H. and LEVELINK, H. G., Water Explosion as a Cause of Casting Defects 241

W

WALLACE, J. F. and BERTOLINO, M. F., Influence of Metal Factors, Molding Sand Composition and Casting Shape on Mold Cavity Enlargement 589
WALLACE, J. F. and HALLERBERG, W. L., Effects and Neutralization of Trace Elements in Malleable Iron 405
WALLACE, J. F. and SAWYER, J. C., Effects and Neutralization of Trace Elements in Ductile and Gray Irons 385
WALLACE, J. F. and SKROCKI, R. R., Permanent Molding of Iron and Steel 581
WATMOUGH, T. and PRASAD, J. S., Thermal Treatment to Achieve Dimensional Stability in Heat-Resistant Cast Iron and Steel 447
WEAVER, R. H., A Key Responsibility of Industrial Relations 562
WEBER, H. J., The Cold-Box Process—Safety and Hygiene Aspects 273
WENNINGER, C. E., Green Sand Processing—An Introduction to Current Fundamental Thinking 521
WILDERMUTH, J. H., LUTZ, R. H., LOPER, C. R., A Study of Thin Metal Ingate Restrictions in Steel and Ductile Iron Castings 258
WILLIAMS, D. C., SHIREY, D. R., Observations on Factors Affecting Mold-Metal Interfacial Penetration Phenomena 661
WILLIAMS, J. T., The Importance of Well Maintained Engineered Work Standards 507
WINN, J. L. and PETERSON, E. F., Building and Adapting Core Boxes for Use in Modern Core Blowing Equipment 297
WOMOCHEL, H. and SIGERFOOS, C. C., Influence of the Mold on Shrinkage in Ferrous Castings 417
WU, W., BERRY, J. T., ST. JOHN, F. M., Effects of Thermal Parameters on Ductility of Aluminum Alloys 645

Y

YOSHIMURA, H., Centrifugal Casting of Large Diameter Ductile Iron Pipe 117

SUBJECT INDEX

In most cases the page numbers refer to the *first* page of the entire article which contains the subject listed.

A

Acid Demand
  Determination of Sand 305
Acid Steel making
  Electric melting and
    manganese fade 44
Additives
  Manganese loss in acid steel
    making practice 44
Aluminum
  Automatic pouring using
    new furnace 110
  Chemical composition effect
    on mechanical properties 230
  High Strength X149 and
    mechanical properties 230
  Mold-metal penetration 661
  Molds for plutonium casting 60
  Testing by vacuum solidification . 237
  Thermal effects on Ductility 645
Aluminum Alloy A356
  Bending properties 655
  Fatigue properties 655
  Mechanical properties 655
  Residual stresses 655
Aluminum Bronze alloys
  Microstructure 99
  Properties 99
Aluminum Copper Alloys
  Aluminum–4.5% Copper
    Mechanical properties 77
    Porosity 77
    Shrinkage 77
    Solidification gradient 77
    Soundness of casting 77

B

Binders (see also Bonding of Sand)
  Clay durability of 29 commercial
    clays 334
  Investment molds, low tempera-
    ture formation 252
Benzene fractions and
  Seacoal effect on green sand
    transformation zones 29
Bonding of Sand
  Bond coating thickness
    determination 142
  Cold Box process 212
  Water-bond ratios and
    moldability 65
Bronze
  Charpy impact properties 99
  Melting and Oxygen enrichment
    in crucible 196
  Propeller alloys, properties 99

C

Carbon Equivalent and
  Cast Iron 453
Carbon Pickup and
  Cast Iron 629
Carbon Values and
  Prereduced pellets in cupola
    melting 53
Cast Iron (See also Ductile, Gray,
  Malleable and White iron)
  Carbon
    Equivalent 453
    Pickup 629
  Defects from water explosion ... 241
  Mold cavity enlargement 589
  Mold-metal penetration 661
  New furnace for automatic
    pouring 110
  Sand Molding and Shrinkage ... 417
  Section size relation to
    mechanical properties and
    microstructure 565
  Solidification time relation to
    mechanical Properties and
    microstructure 565
  Thermal treatment for
    Dimensional stability 447
  Ultrasonic testing 169
Cast-Weld Construction of
  Steel castings: thick sections 555
Centrifugal Casting
  Desulfurization 117
  Ductile Iron Pipe (large diameter) 117
  Inoculation 117
  Magnesium addition 117
  Molding methods 117
Ceramic shells and
  Investment molds 252
Cerium produced
  Ductile iron 289
Charge materials
  Cupola thermochemical model for
    charge material composition 264
  Pre-reduced pellets for cupola
    melting 53
Chill Casting and
  Ductile Iron metallurgical
    structure 201
  Plutonium casting 60

Plutonium microcracking prevention 60
Chromium control in Malleable iron 276
Clay and
Durability of 29 commercial clays 334
Sand properties v.s. chemistry .. 334
Clay-water systems and Water-bond ratios and moldability 65
Cleaning and Finishing
Grinder evaluation and design
High speed portable 225
High speed portable 256
High speed portable 307
Grinding Wheel—Portable 17,000 sfpm High Speed Abrasive 434
Coatings for
Permanent molds 581
Sand molds 529
Cold Box process and
Coremaking 212
Safety & Hygiene 273
Cold Working and
Magnesium casting alloys and effects on properties 174
Composition and Aluminum alloy Mechanical Properties .. 230
Computer
Mathematical model for gray iron
Charge materials in cupola ... 264
Composition 264
Properties 264
Copper-base alloys
Melting losses 21
Mold-metal penetration 661
Mold cavity enlargement 589
New furnace for automatic pouring 110
Properties and solidification 573
Welding and repair of castings .. 441
With Zinc, Manganese, Nickel and Aluminum 638
Core Boxes
Core Blowing equipment evaluation 297
Coring blind holes in Uranium castings 222
Coremaking and
Cold box process 212
Coreboxes for coreblowing equipment 297
Graphite mixture for uranium castings 222
Uranium castings 222
Cost Accounting and estimating for Casting price quoting 485
Cracking of
Plutonium castings 60
Crucibles
Bronze alloy melting and oxygen enrichment 196
Melting loss of copper base alloys 21
Plutonium castings 60
Refractories and reactions with nickel base alloys 183
Cupola
Charge materials
Thermochemical-mechanical model for 264
Melting of prereduced iron-ore pellets 53

D

Damping Capacity of Gray Iron 70
Defects
Al-4.5% Cu alloy porosity 77
Microcracking prevention of Plutonium 60
Mold cavity enlargement 589
Plutonium microcracking prevention 60
Porosity of Al-4.5 Cu alloys 77
Scabbing tendency 490
Steel casting; inner flaw detection 169
Surface finish improvements with Seacoal 29
Water explosion as cause of defects in cast iron 241
White Iron Prevention 470
Degassing
Continuous 110
Dendritic structure and
Ductile iron
Melting variables 547
Spiking 547
Desulfurization
Ductile iron centrifugally cast ... 117
Gazal porous plug method 123
Determination of
Acid demand value of sand 305
Particle size of sand 142
Surface area of sand 85
Thickness of bond coating of sand 142
Die casting
Stainless steel 511
Steel alloys 511
Discontinuities in Steel Castings (Hoyt Lecture) .. 153
Dross
Defects in ductile iron 323
Collection in ductile iron 323
Formation in ductile iron 323
Identification in ductile iron 323
Dry strength and
Green molding sand relation 504
Ductile Iron and
Centrifugal casting of large diameter pipe 117
Centrifugal casting of pipe 117
Cerium produced 289
Chemical analysis 540
Chemical composition effect on mechanical properties 201
Chill casting and metallurgical structure 201
Composition effects 540
Dendritic structure and spiking .. 547
Dross Investigation 323
Handling effects 540
Hardenability multiplying factor for molybdenum effect 1
Heavy section and vermiculite graphite formation 497
Heavy section production 540
Low alloy 353
Mechanical properties 540
Melting variables 547
Metal ingate restrictions 258
Microstructures 540
Molybdenum effect on hardenability multiplying factor 1
Prereduced pellets, influence on quality in cupola melting 53
Trace elements effects on Neutralization Sand and ingot molds 201
Treatment effects 540
Ductility and
Aluminum alloys and thermal parameters 645

E

Enlargement of Mold Cavity (see Mold cavity enlargement)
Electric Furnace
Steel melting in acid steelmaking practice 44

F

Feeding paths for
Risering castings 463
Flaws in
Steel castings inner flaw detection with ultrasonic testing 169
Flux
Separation in magnesium alloys .. 92
Furnaces (see also type; i.e., Cupola, Arc, Induction etc.)
New furnace for automatic pouring of steel, cast iron, copper base alloys, and aluminum 110

G

Gating
Ingate restriction in steel and ductile iron 258
Copper base alloys 573
Mold cavity enlargement 589
Gazal Porous Plug method of Desulfurization 123
Graphite
Cores for:
Uranium castings 222
Molds for:
Magnesium Lithium casting ... 189
Plutonium casting 60
Uranium castings 222
Structure of Gray iron by sonic testing 70
Vermiculite graphite formation in ductile iron castings 497
Gray Iron and
Damping capacity 70
Graphite structure 70
Mechanical properties v.s. dynamic properties 70
Permanent molding 581
Prereduced pellets, influence on quality in cupola melting 53
Sonic testing of properties 70
Trace elements—Effects and neutralization 386
Green compression strength and
Coating thickness and point of contact relation 529
Green Sand
Benzene fractions effect 28
Dry strength relationships 504
Processing 521
Seacoal effect 29
Transformation zones 29
Grinders
Air v.s. High frequency electrical 256
High speed 256
High speed 307
Portable high speed 225
Grinding Wheel
High Speed Portable 17,000 sfpm abrasive 434

H

Hardenability multiplying factor of Ductile iron with molybdenum . 1
Hardness
Steel casting hardness detection by ultrasonic testing 169

Heat Treatment (See thermal treatment)
Heavy section production of
Ductile Iron 540
High carbon equivalent
Cast Iron 453
High carbon ferrous alloys and
Effect of solidification time and section size on the mechanical properties and microstructure 565
Hoyt Memorial Lecture 1968
Evaluation of discontinuities in castings under industrially stressed conditions 153

I

Iron-Carbon-Silicon System
Revision of 369
Investment Molds
Ceramic shells 252
Low temperature 252
Investment casting
Molds—low temperature 252
Industrial relations and
Motivation 562

M

Machine tool
Pattern making 311
Maintaining
Work standards 507
Malleable Iron
Chromium control 276
Mold Metal Penetration 661
Pearlitic
Air-quenched and reheated ... 127
Air-quenched and tempered ... 127
Oil-quenched and tempered ... 127
Trace elements—Effects and neutralization 405
Manganese Bronze
Melting loss in crucible furnace .. 21
Microstructure 99
Properties 99
Manganese fade in
Acid steelmaking practice 44
Magnesium alloys and
Cold working effect on properties 174
Flux separation 92
Magnesium-Aluminum-Zinc alloys
Property improvements v.s. alloy content 133
Magnesium-Lithium
Graphite molding material for ... 189
Material handling and
Ductile iron, heavy section 540
Mechanical properties and
Al-4.5% Cu alloy v.s. solidification gradient 77
Aluminum alloys and
Solidification 645
Thermal parameters 645
Aluminum alloy A356 655
Aluminum alloy X149 230
Bronze alloys 99
Cast iron relation to solidification time and section size 565
Clays—29 commercial 334
Copper-Base Alloys 638
Copper Base Alloy & Solidification 573
Ductile iron and effect of chemical composition 201
Ductile iron, heavy section 540
Ductile iron—low alloy 353
Gray iron castings 70
Manganese-aluminum-bronze alloys 99
Magnesium-Aluminum-Zinc alloys 133
Magnesium casting alloy and cold working effect 174
Nickel-Aluminum-Bronze alloys .. 99
Ni-resist strengthening by Refrigeration and Reaustenitization 425
Solidification of Cast iron and section size 565
Steel casting under stress 153
Melting
Bronze alloys and oxygen enrichment 196
Copper-Base alloys
Manganese bronze 21
Red Brass 21
Yellow brass 65/35 21
Ductile iron 547
Iron ore prereduced pellets 53
Plutonium 60
Steel melting in acid steelmaking practice 44
Microcracking
Prevention in Plutonium castings 60
Microstructure of
Bronze 99
Ductile iron 201
Ductile iron—low alloy 353
High carbon ferrous alloys 565
Manganese-Aluminum-Bronze ... 99
Nickel-aluminum-bronze 99
Mold cavity enlargement and
Casting shape influence 589
Metal factors influence 589
Sand and Sand Binder influence . 589
Mold coatings for
Permanent molds 581
Mold-metal penetration and
Aluminum 661
Cast iron 661
Copper-base alloys 661
Sand—Silica, Zircon, Olivine .. 661
Steel 661
Mold wall movement (see Mold Cavity Enlargement)
Molding Sand and
Mold cavity enlargement 589
Shatter toughness test 283
Water-bond ratios and moldability 65
Molds and
Dimensional stabilization with seacoal 29
Plutonium casting 60
Water-bond ratios 65
Molybdenum and
Ductile iron hardenability multiplying factor 1
Motivation and
Industrial relations 562
Work standards 507

N

Nickel-Aluminum Bronze
Microstructure 99
Properties 99
Nickel Base alloys and
Reaction with crucible refractories 183
Ni-resist and
Strengthening by Refrigeration and Reaustenitization 425
Nodular iron (see Ductile Iron)

P

Particle size determination of
Sand grains 142
Pattern making
Machine tool patterns 311
Permanent molds
Aluminum molds for plutonium castings 60
Coatings for 581
Ferrous Castings 581
Graphite molds for Plutonium ... 60
Magnesium Lithium Castings .. 189
Uranium casting 222
Phase Diagrams
Revision of Fe-C-Si System 369
Pipe
Centrifugal casting 117
Plutonium casting and
Chill casting 60
Crucibles used 60
High density and high purity ... 60
Microcracking prevention 60
Molds for 60
Porosity of
Aluminum castings and effect of hydrogen and inclusions 237
Aluminum-4.5% Copper v.s solidification gradients 77
Porous Plug (Gazal method) of
Desulfurization 123
Pouring
Automatically with new furnace . 110
Pouring and
Mold cavity enlargement 589
Prereduced pellets and
Steel Scrap replacement in cupola melting 50
Processing
Green sand 521
Propeller alloys
Impact properties 99
Properties (see Mechanical properties)

Q

Quality control of
Aluminum by vacuum solidification tests 237
Cast iron rolls 169
Quenching
Magnesium-Aluminum-Zinc 133
Pearlitic malleable iron 127
Quoting Casting Prices 485

R

Red Brass
Melting loss in crucible furnace . 21
Refractories and
Nickel base alloy reaction in crucible 183
Revision of
Iron-Carbon-Silicon System 369
Risering and
Feeding paths 463
Ingate restrictions in steel and ductile iron 258
White iron castings; base and connection design 559

S

Sand and
Acid demand value determination 305
Clay effects 334
Coating thickness and green strength relation 529
Contact points and green strength relation 529
Green sand relations to dry strength 504
Green strength and coating thickness relation 529

Mold cavity enlargement 589
Mold-metal penetration 661
Particle size determination 142
Rate of formation of
dry sand zones 29
Seacoal addition effects 9
Seacoal benzene zylene effects .. 29
Strength and scabbing tendency . 490
Strength relationships
in green molding sand 504
Surface area relationships 85
Thickness of bond coating 142
Vaporization interface velocity
decrease 29
Wet Strength and scabbing
tendency 490
Sand Bonding Binders and
Cold Box process 212
Mold cavity enlargement 589
Sand green strength 529
Sand wet strength relation to
scabbing tendency 490
Scabbing tendency and
sand wet strength 490
Water-bond ratios and
moldability 65
Safety and Hygiene and
Cold Box Process 273
Scabbing tendency and
Sand wet strength 490
Scrap
Replacement by prereduced
pellets in cupola 53
Seacoal and
Benzene zylene fractions 29
Mold dimensions for stabilizing . 29
Mold knockout characteristics ... 9
Surface finish improvement ... 29
Transformation zone properties .. 9
Section Size of
Cast Iron and relation to mechanical
properties and microstructure . 565
Shatter test for
Molding sand 283
Shrinkage of
Aluminum-4.5% Copper alloys v.s.
solidification gradients 77
Sand Molds for Cast Iron 417
Silicon values and
Prereduced pellets in cupola
melting 53
Slag and
Steel melting in acid steelmaking 44
Slot Dams for
Steel and Ductile iron castings .. 258
Soil mechanics and
Water-bond ratios of molding sand 65
Solidification and
Aluminum mechanical properties . 645
Aluminum—4.5% Copper v.s.
casting soundness 77
Cast Iron relation to mechanical
properties and Microstructure . 565
Copper base alloy properties 573
Ductile iron vermicular graphite
prevention 497
Mold cavity enlargement 589
Sonic testing of
Gray iron 70
Spiking in
Ductile iron and dendritic
structure 547
Stainless steel
Die casting 511
Steel Castings and
Die casting of stainless and
alloy steels 511
Fatigue Notch Sensitivity 349
Manganese fade in acid
electric furnace melting 44
Metal ingate restrictions 258
Mold-metal penetration 661
New furnace for
automatic pouring 110
Permanent molding 581
Thermal treatment for dimensional
stability 447
Ultrasonic testing for
hardness depth 169
Ultrasonic testing for inner flaw
detection 169
Welding of cast sections 555
Welding steel tubes to ferrous
and nonferrous alloys 515
Steel Scrap and
Replacement by prereduced pellets
in cupola melting 53
Stressed conditions for
Steel castings 153
Surface area
Determination of sands 85

T

Testing
Aluminum castings by
Vacuum solidification 237
Cast iron rolls by
Ultrasonic method 169
Ductile iron by Hardenability
multiplying factors 1
Gray iron by
Sonic method 70
Sand by
Acid demand value 305
Shatter test 283
Surface area 85
Steel castings by
Nondestructive 153
Thermal treatment for dimensional
stability of
Cast Iron 447
Steel 447
Thermodynamics of
Steel melting in acid steel
making practice 44
Trace elements—
Effects and neutralization in
Ductile Iron 386
Gray Iron 386
Malleable Iron 405
Trace Elements effect on
Ductile iron in sand and
ingot molds 201
Tramp elements (see Trace elements)
Transformation temperature and
Ductile iron—low alloy 353
Transformation zones and
Hardness and
temperature gradients 9
Seacoal benzene and
xylene fractions effects 29
Seacoal effect on properties
of green sand 29
Treatment effects and
Ductile iron, heavy section 540
Trends in
Magnesium-Aluminum-Zinc
casting 133
Tungsten Carbide Surfacing for
Wearing Metal Parts 430

U

Unidirectional solidification and
Ductile iron vermicular
graphite prevention 497
Uranium castings
Coring blind holes in 222
Utilization of
Waste By-Products 313

V

Vacuum
Testing of solidification for
aluminum casting quality 237
Vermiculate graphite formation in
Ductile iron, heavy section 497

W

Wage incentives and
Work standards 507
Waste By-Products
Utilization of 313
Water-Bond Ratios and
Moldability of molding sands ... 65
Water explosion cause of
Casting defects 241
Wearing Metal Parts
Tungsten Carbide Surfacing for . 430
Welding
Copper base alloy castings 441
Ferrous alloys to steel tubes 515
Hydrodynamic welding 515
Nonferrous alloys to steel tubes .. 515
Steel castings: thick sections ... 555
Steel tubes to ferrous and
nonferrous alloys 515
Wet Strength and
Scabbing tendency 490
White Iron
Defect Prevention 470
Riser base and connection design 559
Work standards and
Maintaining them 507
Motivation 507
Wage incentives 507

XYZ

Xylene fractions and
Seacoal effect on
sand transformation zones 29
Yellow Brass 65/35
Melting loss in crucible furnaces . 21